IN THE SPECIFICATION:

Paragraph beginning at line 1 of page 4 has been amended as follows:

In ~~the meantime, in~~ the traditional ion beam apparatus described above, as shown in Fig. 11, in irradiating an argon ion beam onto a cross section 104 of a sample 103, the argon ion beam is widely irradiated onto the area other than the cross section 104 of the sample 103. Therefore, the argon ion beam is irradiated onto a step part and the like adjacent to the base end side of the cross section 104 of the sample 103, and is partially irradiated onto the top surface and the like of the step part to fly or eject secondary particles of the fracture layer, causing a problem that the secondary particles of the removed fracture layer are again attached onto the cross section 104 and contaminate it.

Paragraph beginning at line 17 of page 4 has been amended as follows:

~~Disclosure~~ Background of the Invention

In order to achieve the above object, an ion beam apparatus according to the invention ~~has:~~ has a holder member which holds a sample; and a removing beam source which irradiates a gaseous ion beam onto a processed surface of a sample held by the holder member and removes a fracture layer

on the processed surface, the processed surface being formed by irradiating a focused ion beam. ~~And, the~~ The gaseous ion beam is irradiated from a holding end side of the sample with respect to a direction vertical to the processed surface so that its irradiating direction is tilted with respect to the vertical direction.

Paragraph beginning at line 4 of page 5 has been amended as follows:

According to the ion beam apparatus of the invention thus configured, when the gaseous ion beam is irradiated onto the sample and the fracture layer is removed, the gaseous ion beam is irradiated onto a step part formed adjacent to the processed surface, and thus secondary particles are ~~flown~~ ejected. However, the ~~flown~~ ejected secondary particles do not travel in the direction where they ~~do not~~ reach the processed surface. Therefore, it is reduced that the fracture layer removed by the gaseous ion beam is again attached onto the processed surface.

Paragraph beginning at line 13 of page 6 has been amended as follows:

In the ion beam processing method according to the invention thus configured, at the second step, the gaseous ion beam is irradiated from the holding end side of the sample

with respect to the direction vertical to the processed surface of the sample so that its irradiating direction is tilted with respect to the vertical direction. Therefore, the gaseous ion beam is irradiated onto the step part formed adjacent to the processed surface, and thus secondary particles of the fracture layer are ~~flown~~ ejected. However, the ~~flown~~ ejected secondary particles travel in the direction where they do not reach the processed surface. Accordingly, it is reduced that the secondary particles of the fracture layer removed by the gaseous ion beam are again attached onto the processed surface.

Paragraph beginning at line 20 of page 8 has been amended as follows:

Fig. ~~3 is perspective diagrams; (a)~~ 3(a) is a perspective diagram illustrating a sample in which a cross section is processed, and ~~(b)~~ Fig. 3(b) is a perspective diagram illustrating the sample in which the cross section has been processed;

Paragraph beginning at line 22 of page 9 has been amended as follows:

Fig. 10 is a cross section schematically illustrating an example of another ion beam apparatus according to the invention;

Fig. ~~10~~ 11 is a schematic diagram for describing a state that an the inert ion beam is irradiated onto a cross section of a sample; and

~~Fig. 11 is a cross section schematically illustrating an example of another ion beam apparatus; and~~

Heading beginning at line 5 of page 10 has been amended as follows:

~~Best Mode for Carrying out~~ Detailed Description of the Invention

Paragraph beginning at line 8 of page 10 has been amended as follows:

As shown in Figs. 1 and 2, an ion beam apparatus 1 of this embodiment is a so-called side entry ion beam apparatus, having a vacuum container 10 which processes a sample 3 therein, a holder part 11 which holds the sample 3, a processing beam part 12 in the form of a focused ion beam unit which irradiates a focused ion beam from a gallium ion source onto the sample 3 and processes an observation cross section,

a removing beam unit or part 13 which irradiates an inert ion beam onto the cross section processed in the sample 3 and removes a fracture layer on the cross section, and an observing beam unit or part 14 which irradiates an electron beam onto the cross section of the sample 3 ~~and observes~~ to enable observation of the cross section.

Paragraph beginning at line 12 of page 13 has been amended as follows:

The processing beam part 12 is a focused ion beam irradiation ~~apparatus~~ unit, for example, its lens-barrel is disposed vertically above the vacuum container 10, having a gallium liquid metal ion source which is a processing beam source (not shown in the drawing) and an ion optical system which focuses, scans and irradiates ion beams from the gallium liquid metal ion source. The processing beam part is disposed so that the irradiation axis (the center axis of the lens-barrel) of the focused ion beam is vertical with respect to the sample 3.

Paragraph beginning at line 21 of page 13 has been amended as follows:

The removing beam unit or part 13 is a gaseous ion beam irradiation apparatus, for example, and is disposed at the position to approach the cross section 4 of the sample 3, having ~~a~~ the removing beam source (gaseous ion gun) (not shown in the drawing) which irradiates an inert ion beam such as argon gas and helium gas of inert gas. The removing beam part 13 is disposed so that its irradiation axis (the center axis of the lens-barrel) toward the cross section 4 of the sample 3 is tilted at an angle of about 35 degrees in the upper slanting direction with respect to the horizontal direction. Furthermore, it is acceptable that the removing beam source is configured to irradiate an oxygen ion beam with oxygen as necessary. It is fine that a chemical species at this time is oxygen radicals other than oxygen ions.

Paragraph beginning at line 10 of page 14 has been amended as follows:

The observing beam unit or part 14 is an electron beam irradiation apparatus, for example, and is disposed at the position to approach the cross section 4 of the sample 3, having an electron gun (not shown in the drawing) which irradiates an electron beam, and a TEM detector 33 which detects transmission electrons having been irradiated from the

electron gun and transmitted through the cross section 4 of the sample 3. The observing beam part 14 is disposed so that its irradiation axis (the center axis of the lens-barrel) is tilted at an angle of about 35 degrees in the upper slanting direction with respect to the horizontal direction. As shown in Figs. 1 and 7(c), the detector 33 is disposed at the position to face the electron gun as sandwiching the cross section 4 of the sample 3. In addition, the observing beam part 14 described above takes the transmission mode, but it is acceptable to configure to have the reflection mode in which the detector is disposed at the position to approach the top surface side of sample 3, for example, and detects secondary electrons reflected in the cross section 4.

Paragraph beginning at line 17 of page 17 has been amended as follows:

Then, for the sample 3, the irradiating direction of the inert ion beam for the cross section 4 is tilted at the tilt angle 8 with respect to the normal L. Thus, the inert ion beam is irradiated onto the side surface of the step part adjacent to the cross section 4 and secondary particles of the fracture layer are <u>ejected or</u> flown. However, the flown secondary particles travel in the direction where they do not reach the cross section 4. Therefore , it is reduced that the secondary particles removed from the fracture layer of the

cross section 4 are again attached onto the cross section 4 to contaminate the cross section 4.

Paragraph beginning at line 4 of page 19 has been amended as follows:

~~Besides, in the~~ In this embodiment, the holding part 24 is rotated when the cross section 4 is processed by the focused ion beam and the fracture layer is removed by the inert ion beam in order to remove streaks. However, it is acceptable that streaks are collectively removed when the fracture layer is removed by the inert ion beam. In addition, when streaks are collectively removed by the inert ion beam, the irradiating direction of the inert ion beam with respect to the cross section 4 needs to be varied from the irradiating direction of the focused ion beam with respect to the sample 3.

Paragraph beginning at line 20 of page 20 has been amended as follows:

Lastly, in the ion beam apparatus 1 described above, the removing beam part 13 is disposed in the upper slanting direction with respect to the sample 3 on the holder member 21. Another ion beam apparatus 2 in which the removing beam part 13 is disposed at ~~the~~ a different position will be described briefly with reference to Fig. 10. In addition, as

compared with the ion beam apparatus 1 described above, since ~~another~~ the ion beam apparatus 2 is varied at the positions of the removing beam part 13 and the observing beam part 14, the same ~~numeral~~ reference numerals and signs are ~~designated~~ used to designate the same components~~, omitting the description~~ and a description thereof is omitted.

Paragraph beginning at line 5 of page 21 has been amended as follows:

As shown in Fig. 10, in ~~another~~ the ion beam apparatus 2, a removing beam part 13 is disposed so as to irradiate an inert ion beam onto a sample 3 on a holder member 21 from the lower slanting direction, and an observing beam part 14 is disposed so as to irradiate an electron beam onto the sample 3 on the holder member 21 from the horizontal direction.